

REMARKS

Please cancel Claims 4 and 5 without prejudice or disclaimer, not to overcome the cited art, but rather to narrow the claim issues so as to put the remaining Claims in a *prima facie* condition for allowance.

Previous Response (filed August 10, 2005)/Previous Office Action, mailed January 10, 2005

In the previous Office Action, mailed January 10, 2005, the Examiner had rejected Claims 17-29 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Further, the Examiner had stated that Claims 17-29 would be allowable if rewritten or amended to overcome the 35 USC 112, second paragraph rejection.

Applicants respectfully submit that Claims 17-29 have been amended to overcome the rejections under 35 USC 112, second paragraph, of the Office Action dated January 10, 2005. Specifically, the term “Banbury mixer” has been removed as a Banbury mixer is a closed chamber mixer. Therefore, the limitation of a closed chamber mixer includes a Banbury mixer. Applicants respectfully submit that none of the cited art utilizes a conventional closed chamber mixer as is described in the specification. The cited art does not specifically teach any mixing. Any achieved mixing other than by a substantially complete melting of all material constituents, by the cited art devices, is a result of the material being moved through an extruder or an injector but this mixing is far less homogeneous than that achieved through the closed chamber mixer. As disclosed in the Applicants’ specification, the Banbury mixer or other closed chamber mixer comprises rotors which thoroughly mix the mixture, thus, the mixture, that flows into the extruder for injection into the mold, is a homogeneous mixture and such cannot be achieved relying solely on the extruder or injector. Further, as per amended Claim 17, the closed chamber

mixer is **upstream** of the extruder; thus, Applicants respectfully submit that the mixer and extruder are not one and the same and that the material is already substantially mixed when it enters the extruder.

Regarding the term “a tail stop and/or sensor”, Applicants have amended Claim 17 to recite only a sensor which is utilized as an indication that the rod 30 has completed its travel. The instant invention contemplates that at the end of the rod travel, a sensor will be triggered and the injection of material, into the mold, will cease. Applicants respectfully submit that none of the cited art devices employ a sensor in combination with a closed chamber mixer and a member for adjustably controlling the density of the material as the mold is filled. As more fully explained, hereinbelow, none of the cited art devices teach density control as they are concerned with the uniform filling of a mold with a predetermined amount material. Although, the Examiner seems to be asserting that a controlled volume fill may inherently set a density, that is not what is taught by the instant invention. The instant invention concerns a molded article in which density is controlled, either constant or variable, throughout the length of the molded part. None of the cited art recognizes that the density, over the length of a mold, may change due to the velocity of the piston which accepts the material into the mold. The cited art is specifically concerned about filling a mold without voids and not about the actual density of the molded part. Thus, Applicants respectfully submit that Claims 17-29 now stand in formal condition for allowance.

Specification

Applicants have noted the Examiner’s comments regarding the use of the trademark BANBURY and have made the appropriate corrections. Applicants respectfully submit that these changes are not for the purpose of introducing any new matter and thus respectfully ask that all amendments to the specification be entered.

Claim Rejections – 35USC § 112

Claim 26 stands rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants appreciate the Examiner's comments, regarding the lack of antecedent basis for the term "said rod" and have amended Claim 26 accordingly. Applicants wish to bring to the Examiner's attention that Claim 26 should be dependent on Claim 22 not on Claim 17. This typographical error was made during the re-numbering of claims in the previous Office Action Response filed August 10, 2005. Applicants respectfully submit that this correction overcomes the rejection of Claim 26 under 35 USC 112, second paragraph.

Claim Rejections – 35USC § 102

Applicants respectfully submit that Fritsch, Valyi, and Sasaki do not teach the control of density. They only disclose a method to control the filling of a cavity so as to fill a volume with substantially no voids. However, this in itself does not accurately control density nor is this art concerned with the density other than incidental, but not necessarily accurate, density control which may be incidental to the control of voids. The Court of Appeals has held that it is impermissible to engage in hindsight reconstruction of a claimed invention using the applicant's structure as a template and selecting elements from references to fill the gaps. *See In re Gorman* 933 F.2d. 982 at 987 (1991) As such, it is impermissible to reconstruct Fritsch and/or Valyi and/or Sasaki in light of Applicants' structure so as to read it as referring to or teaching density control when no such reference was made in the Fritsch, Valyi, or Sasaki disclosures.

Claims 1, 3-6, 8-9, and 15 -9 and 13-16 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,447,101 to Fritsch. This rejection is respectfully traversed.

The Examiner alleges that Fritsch teaches a member including a brake (Fig. 7, #'s 31, 32, or 33) and a gear (Fig. 7, #'s 19 and 25 broadly act as a gear). Applicants respectfully point out that the Fritsch elements 31, 32, and 33 are not brakes but are actually stop contacts that control the length of the rubber slug (Col. 5, lines 62-69 and Col. 6, lines 18-23). Further, Fritsch's element 25 is a "servo unit" which includes a cylinder 19. Applicants respectfully submit that elements 19 and 25 do not at all act like a gear. There is no rotational contact between 25 and 19 which would cause either 19 or 25 to move.

In sharp contrast, Applicants' rod 30, having a toothed plate 36 attached thereto, causes a rotation of gear 90. Gear 90, through additional linkages, causes disc 86 to rotate. Applicants' brake mechanism (pad 84 and caliper 82) can be actuated, against disc 86 to slow the rotation of disc 86 which ultimately slows the movement of rod 30. Thus, per amended Claim 1, it is clear that the Applicants' brake and gear system is wholly different than that taught by Fritsch.

Further, in paragraph 17 of the instant Office Action, the Examiner states that even though Fritsch does not specifically recite to a use of the invention to control density, it is clear that by braking the piston, but continuing to inject into the cavity density will be affected. Applicants respectfully point out that the Fritsch invention does **not** teach further injection after the piston stops. The Fritsch piston is **only a go or no go**. Fritsch does not teach nor suggest braking or slowing the movement of the piston (nor the fill rate of the cavity). Once the Fritsch rod end 34 contacts the pre-selected switch 31, 32, or 33, the worm 17 stops and thus no more material can be injected into the cavity. Fritsch relies only on the filling of the cavity, without air pockets to control the amount of rubber in a particular length slug.

In sharp contrast, Applicants, at page 6, line 18 - page 7, line 2 disclose the density control. Specifically, the density of the material in a given mold is varied, or made constant by controlling the braking mechanism comprised of the brake pad 84 against the disc 86. The

effective length of the mold increases as the piston 32 is pushed through the mold, the density of the molded material will decrease as a function of the distance through which the piston 32 moves. If a uniform density of the molded product is desired, the velocity of the piston can be continuously decreased by applying break pressure at a continuously increasing rate. Therefore, it is respectfully submitted that Claims 1, 3, 6, 8-9, and 15 are patentable over the cited Fritsch reference and a favorable condition of such claims is respectfully requested.

Claims 1, 3-6, and 15 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,082,604 to Valyi. This rejection is respectfully traversed.

Valyi does not teach, disclose, nor even suggest the control of the density. Valyi discloses the injection of a pre-determined amount of material and uses the piston to first ensure that the injected material fills the entire chamber. Then as the mold is cooled, the piston applies pressure to the cooling material to control shrinkage. The amount of material to enter the mold is predetermined and the amount of pressure against the material during cooling is pre-determined. Further, Applicants' respectfully submit that the Valyi piston is not capable of variable sliding in the same manner as the Applicants' invention. The rate of the Valyi piston is only controlled to ensure proper filling of the mold and the pressure applied to prevent shrinking is predetermined and not density based.

Further, Valyi does not teach nor disclose a brake and gear system as claimed by Applicants. Valyi does not teach, disclose, nor even suggest anything resembling or working like a gear. Regarding the stopping of the Valyi piston, this is accomplished by a balance of pressure on both sides of the Valyi piston. However, the flow of material into the Valyi chamber is not a function of the braking. Valyi teaches to fill the chamber a pre-determined amount of material and then closing the valve 8. In sharp contrast, Applicants' fill up the chamber until the piston rod contacts a switch or sensor and then the injection valve is closed. Therefore, the amount of

material, that enters the Applicants' mold, may vary depending on the desired density and not just based on a pre-determined volumetric amount of material. Therefore, it is respectfully submitted that Claims 1, 3, 6, and 15 are patentable over the cited Valyi reference and a favorable condition of such claims is respectfully requested.

Reconsideration is respectfully requested for Claims 1, 3, 8, 15, 17, and 26, said claims having been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,370,518 to Sasaki. This rejection is respectfully traversed.

Sasaki does not teach, disclose, nor even suggest the use of a variable speed piston controlled by a braking system to control the density of the material nor the use of a closed chamber mixer as per amended Claims 1 and 17. Sasaki relies only on the action of the extruder to mix the materials. In sharp contrast, Applicants mix the material in a separate mixer to ensure greater homogeneity and then use the extruder to inject the material into a mold.

Further, Sasaki teaches to inject only a predetermined amount of material into a mold and then to close the injection valve after that material has been received. Sasaki is not concerned about density control but only teaches a method to move all the material in to every "nook and corner" of the mold. Therefore, it is respectfully submitted that Claims 1, 3, 8, 15, 17, and 26 are patentable over the cited Sasaki reference and a favorable condition of such claims is respectfully requested.

Claim Rejections – 35USC § 103

Claims 10-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over either U.S. Patent No. 3,447,101 to Fritsch or U.S. Patent No. 5,082,604 to Valyi in view of U.S. Patent No. 5,380,184 to Von Holdt, Sr. This rejection is respectfully traversed. Claims 10-12 depend from Claim 1 and are thereby submitted to be patentable for the reasons set forth above.

Claims 10-12 and 18-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 5,380,184 to Von Holdt, Sr. This rejection is respectfully traversed. Claims 10-12 depend from Claim 1 and Claims 18-21 depend from Claim 17 and are thereby submitted to be patentable for the reasons set forth above.

Claims 22, 23, and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 3,447,101 to Fritsch. This rejection is respectfully traversed. Claims 22, 23, and 29 depend from Claim 17 and are thereby submitted to be patentable for the reasons set forth above.

Claim 24 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 3,447,101 to Fritsch and in further view of U.S. Patent No. 5,380,184 to Von Holdt, Sr. This rejection is respectfully traversed. Claim 24 depends from Claim 17 and is thereby submitted to be patentable for the reasons set forth above.

Claim 27 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 5,732,858 to Plastino. This rejection is respectfully traversed. Claim 27 depends from Claim 17 and is thereby submitted to be patentable for the reasons set forth above.

Claim 28 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 5,916,503 to Rettenbacher. This rejection is respectfully traversed. Claim 28 depends from Claim 17 and is thereby submitted to be patentable for the reasons set forth above.

Claims 30-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,370,518 to Sasaki in view of U.S. Patent No. 4,626,189 to Hammer et al. This rejection is respectfully traversed. Claims 30-31 depend from Claim 17 and are thereby submitted to be patentable for the reasons set forth above.

Conclusion

In light of the above discussion and amendments, Applicants respectfully submit that the application, with its independent claims 1 and 17 and Claims 3, 6, 8-12, 15, 18-24, and 26-31 which depend from Claims 1 and 17, is believed to be in prima facie condition for allowance. Accordingly Applicants courteously solicit the advancement of the application to issue. The Examiner is invited to contact, by telephone, Taras P. Bemko, attorney of record for Applicants, at 713-355-4200, if the Examiner is of the opinion that such a telephone call would serve to expedite these proceedings. Although Applicants believes that no additional fees, beyond the one month extension request fee are required, the Commissioner is hereby respectfully authorized to deduct such fees, as might be required, from Deposit Account Number 13-2166.

Respectfully Submitted,

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